OBSTETRICAL ANALGESIA*

By HARRY S. FIST, M. D.
Los Angeles

DISCUSSION *by P. Brooke Bland, M.D., Philadelphia; E. M. Lazard, M.D., Los Angeles; Lyman H. Robison, M.D., Los Angeles.*

PHYSICIANS have sought for many years means wherewith they might lessen the suffering of labor, but no universally satisfactory drug or combination of drugs has yet been found.

No one method is applicable to every case. Often when one drug is contraindicated another may be given with safety if proper precautions are taken. None of the analgesics now in general use should be given in the average home confinement. The patient must be in a maternity institution of moderate size with ample nursing and medical staff; under the supervision of a trained obstetrician. Any simplification of technique, or decrease of risk to mother or child, would therefore be welcomed.

THE STAGES OF LABOR

Proper administration of the analgesia of labor requires a consideration of the mechanism.

The first stage is one of dilatation and canalization. The upper uterine segment contracts, pulling the lower uterine segment around the presenting part. At this time no voluntary expulsive effort is necessary, but analgesia must not interfere with uterine contractions.

The second stage is the stage of expulsion. During this stage, contractions of the uterus and the accessory muscles cause the presenting part to descend and flex so that rotation may follow and labor continue. Prolonged labor, the result of poor contractions of uterus or accessory muscles, tends to cause exhaustion and resulting postpartum hemorrhage. It prolongs birth pressure, thus endangering the child. Analgesia, therefore, must not interfere with voluntary efforts during the second stage, or decrease strength or frequency of uterine contractions. Surgical interference must be feasible at any time, if indicated, so that labor may be terminated. The child must breathe; analgesia should not cause apnea or asphyxiation.

In the third stage the secundines are expelled. Failure to conserve the strength during the first or second stage may cause relaxation and postpartum hemorrhage in the third. Lacerations of cervix and perineum should be repaired at once. The mother should be in the best possible condition for a favorable puerperium. She must not be exhausted. The rectum and colon should not be injured.

ANALGESICS IN LABOR

Among the analgesics now employed are: ether, chloroform, nitrous oxid-oxygen, morphin, morphin-scopolamin, and the so-called synergistic analgesia. Some work has been done on the use of hypnotism, lumbar spinal injections,[1] and also injections of local anesthetics into the cervix.

Rucker[2] reports that, in the order given, the following drugs lessen uterine contractions; paraldehyd, magnesium sulphate, morphin, bromids, chloral. General anesthetics in the order of uterine power inhibition are: chloroform, ether, nitrous oxid-oxygen and ethylene.

Chloroform-Ether.—Chloroform, properly administered, is a fairly safe anesthetic for the perineal stage of labor. Ether is much safer, for it is a stimulant instead of a depressant. Although its action is slower, the margin of safety is greater, and it affords warning signs long before danger of fatality develops.

Nitrous Oxid-Oxygen-Ethylene.—Nitrous oxid-oxygen is comparatively free from danger, and, except for the expense, is an excellent anesthetic, especially for the perineal stage. Ether may be combined with it for forceps, repair, etc. Nitrous oxid is reported[3] as prolonging the average bleeding time at birth one minute, and increasing the coagulation time two minutes. Ethylene increased bleeding time at birth two minutes, and coagulation time by three minutes.

Twilight Sleep.—Twilight sleep was first used in 1902 by Steinbrickel.[4] Morphin and scopolamin are the active drugs employed. This combination is now often used by the surgeon and nose and throat specialist, preliminary to local operation, but is not in great favor with the obstetrician, partly because of newspaper notoriety, and partly because it has caused prolonged labors, delayed rotation, unmanageable patients, apneic babies, and postpartum hemorrhage. Pain is not always relieved and labor must often be terminated by the use of forceps. This method requires special hospital care, absolute quiet, and many hours of attendance by the physician.

A twilight sleep patient is not amenable to suggestions. She may be restless on the delivery table and thus unsterilize the drapes. Leg holders must be provided, and the wrists fastened to the head of the bed. Thirty to forty-five minutes must elapse before relief is experienced; gas may be used temporarily. It is, however, possible to apply forceps, iron out the perineum, and repair without further anesthesia.

Gwathmey Method.—At present the morphin, magnesium sulphate, colonic-ether-oil method, advocated by Gwathmey, enjoys great popularity. It is a much discussed method; some users being enthusiastic, while others[5] (possibly including many who do not observe the proper technique) condemn it just as emphatically. It requires careful watching of the patient and judgment in dosage of drugs and time of administration. Good analgesia is often obtained, but there is an occasional apneic child, and always more or less irritation of the rectum and sigmoid. Labor is prolonged, and must, in many cases, be terminated by episiotomy and forceps.

Six drugs are employed for this method: morphin, magnesium sulphate, ether, quinin hydrobromate, alcohol, and olive oil.

* Read before the Obstetrical Section of the Los Angeles County Medical Association, March 12, 1929.

Rectal ether anesthesia was suggested by Roux[6] in 1847. Its use was abandoned shortly afterward.

Wade in 1919[7] reported intestinal paralysis following rectal administration of ether.

Zalka in 1924[8] reported two autopsies after rectal narcosis which showed proctitis and great intestinal irritation. Rectal anesthesia is not under control as is inhalation anesthesia, for the amount of absorption cannot be so readily regulated. There is some irritation of the intestine in every case, a certain small number showing severe and even fatal irritation with hemorrhage. The physician who tests the possibilities for irritation of mucous membranes by attempting to hold in his mouth some of the ether-oil mixture, will be somewhat cautious in administering such a combination.

Because of the tendency of ether or morphin to arrest uterine contractions, the quinin salt is included in the rectal injection as a stimulant. Frequently labor must be terminated by episiotomy and forceps. Olive oil is used as a vehicle to lessen the irritation.

Morphin.—The chief source of danger seems to be the morphin. Hatcher,[9] in a masterful review of obstetrical analgesia, states that morphin in doses over one-sixth grain, and followed by ether or chloroform, involves danger to the child, which rises as the dose of morphin increases. One-fourth grain or more of morphin is used by Gwathmey. When administered within one or two hours of delivery, there is grave danger of apnea or asphyxiation. Pantopon[10] also depresses the respiration, although to a lesser extent than morphin.

Magnesium Sulphate. — Magnesium sulphate has long been known as an analgesic and sedative. Its use in eclampsia, described by Lazard,[11] has been very successful. In the dosage here used (two cubic centimeters of 50 per cent solution) it is harmless. According to Gwathmey,[12] morphin and magnesium sulphate are synergistic. Beckman[13] states that there is no synergism between morphin and magnesium sulphate, and that the combination is more toxic than either drug used alone. This is denied by Gwathmey. In any event, the administration of morphin to the parturient woman endangers the child more or less.

Scopolamin.—Experiments conducted in 1915 at the Washington University Medical School,[14] "demonstrated that scopolamin in doses much larger than were ever recommended for twilight sleep, has no material effect on blood pressure or on respiration." For some cases the above clinic uses scopolamin supplemented by nitrous oxid inhalations.

Bertha Van Hoosen,[15] states that she first reduced the amount of morphin given to this type of patient to one-sixteenth grain, and now uses none, relying on scopolamin alone. Her statistics show excellent results; no asphyxia and very slight blood loss. The scopolamin induces analgesia with increased muscle tone, and relaxes the sphincters. The patients must be watched closely, and are kept with hands fastened above the head during delivery because of danger of contamination of the sterile field. The scopolamin method may also be used for minor obstetric operations.

Doctor Van Hoosen[16] reviews 2023 deliveries which show excellent results with scopolamin as the analgesic. At the onset of active labor, 1/100 grain is given every half hour for two or three doses as needed, then 1/100 grain every two hours as needed. Since the morphin seems to be the objectionable ingredient of both the twilight sleep and Gwathmey treatments, its substitution by scopolamin and magnesium sulphate seems very logical.

AUTHOR'S METHOD

According to Beckman,[17] magnesium sulphate and scopolamin really prove synergistic. Issekutz[18] concludes that when magnesium sulphate is combined with scopolamin there is a true potentiation of the action. These two drugs, then, should induce satisfactory obstetrical analgesia.

During the past four years, in private practice and in a small series of cases delivered by students at the College of Medical Evangelists, the author has produced very satisfactory analgesia with a combination of magnesium sulphate and scopolamin. When the cervix has dilated to two centimeters and pains are strong, occurring at five-minute intervals or less, magnesium sulphate, two cubic centimeters of 50 per cent solution, and scopolamin, grain 1/200, are injected intramuscularly. The magnesium sulphate is repeated every half hour until pain is relieved, and the scopolamin is repeated every hour, if necessary, to obtain relief. In about twenty minutes the patient becomes drowsy. She dozes off between pains, but awakens during contractions. The scene changes from a very noisy to a quiet, calm one. No decrease in strength or frequency of contractions is evident. The pain factor is eliminated and the sphincters seem to relax better. The patient is tractable and fully able to coöperate during the second stage. She may complain during contractions, and on the following day describe the delivery as a not unpleasant dream, during which she felt more or less like a detached onlooker. The child is not born apneic. There is no increased tendency to postpartum hemorrhage. Nitrous oxid or ether may be given for surgery or during the perineal stage.

This method does not increase the danger, but every patient must be carefully watched throughout any labor, whether or not any analgesic be used. Pain is not entirely eliminated, but is greatly decreased. The use of inhalation anesthesia is not contraindicated.

The variability in the scopolamins on the market has been a great cause of failure in the administration of twilight sleep. The ampoules prepared by Roche have proved stable and dependable. The patients have not been restless or obstreperous. Whether or not this quiet and calm is due to synergism between scopolamin and magnesium sulphate, we are not prepared to state. The question of synergism is a debatable one and

will bear further investigation, but the combination has proved so satisfactory that its further trial is justified.

SUMMARY

Morphin has proved unsatisfactory as an analgesic during labor.

Scopolamin, given alone, relieves suffering and does not endanger mother or child, but sometimes causes restlessness, thus interfering with proper asepsis.

Use of magnesium sulphate with scopolamin eliminates the restlessness and provides a simple, safe, efficient obstetrical analgesia.

1930 Wilshire Boulevard.

REFERENCES

1. Cosgrove, S. A.: Spinal Anesthesia in Obstetrics, Am. J. Obst. and Gynec., 14:751, December 1927.

2. Rucker, M. P.: Action of Various Anesthetics upon Uterine Contractions, Anesth. and Analg., 5:235-246, October 1926.

3. Sanford, Heyworth N.: J. A. M. A., 86:267, January 23, 1926.

4. Williams: Textbook of Obstetrics, Ed. 5, p. 363.

5. Schumacher, P.: Monatschr. f. Geburtsh u. Gynäk., 77:313-325, November 1927. Unfavorable Results of Gwathmey's Synergistic Analgesia in Eighty Cases of Labor.

6. Hatcher, Robert A.: The Rectal Administration of Ether in Oil, J. A. M. A., 89:2114, December 17, 1927.

7. Wade: Am. J. Surg., 33:92, 1919.

8. Von Zalka, E.: Arch. f. klin. Chir. (Langenbecks), 129:547, 1924.

9. Hatcher, Robert A.: The Rectal Administration of Ether and Oil, J. A. M. A., 89:2114, 89:2189, 89:2258, December 17, 1927.

10. Macht, D. I.: Action of the Opium Alkaloids, J, Pharmacol. and Exper. Therap., 7:339, October, 1915.

11. Lazard: A Preliminary Report on the Intravenous Use of Magnesium Sulphate in Puerperal Eclampsia, Am. J. Obst. and Gynec., February 1925.

12. Gwathmey: J. A. M. A., 91:1774, December 8, 1928.

13. Beckman, Harry: The Alleged Synergism of Magnesium Sulphate and Morphin, Am. J. Obst. and Gynec., 15:72, January 1928.

14. Schwartz, O. H., and Krebs, O. S.: Scopolamin-Morphin Seminarcosis, J. A. M. A., 81:1083, September 29, 1923.

15. Van Hoosen, B.: Scopolamin Anesthesia in Obstetrics, Anesth. and Analg., 7:151-154, May-June 1928.

16. Van Hoosen, B.: Scopolamin Anesthesia in the Second Stage of Abnormal Labor, Anesth. and Analg., 7:353, November-December 1928.

17. Beckman, Harry: The Alleged Synergism of Magnesium Sulphate and Morphin, J. A. M. A., 85:332, August 1, 1925.

18. Issekutz, B.: Therap. Monatsh., 29:379, 1915.

DISCUSSION

P. Brooke Bland, M. D. (1621 Spruce Street, Philadelphia).—There are so many problems involved in this question that it is absolutely impossible for me to express in a few words my feeling regarding the administration of anesthetics in labor.

No one will deny the benefits of anesthesia, properly administered, to women during confinement.

It is my custom to advocate and practice analgesia or anesthesia of some sort in every case of labor. I would no more think of allowing a woman to pass through the throes of confinement without an anesthetic than I would think of doing a hysterectomy, for example, without anesthesia.

It is almost inconceivable that we were at one time taught that anesthetics were not indicated and that they should not be used in maternity practice. Why women have been made to bear the intolerable suffering of childbirth, I have never been able to understand.

In recent years efforts have been made to discover or develop some form of obstetrical anesthesia that one could look upon as more or less ideal, but thus far the ideal agent has not been discovered.

A separate and distinct anesthetic is not applicable to all obstetric patients. It is my habit in both primigravida and multigravida to administer morphin with hyoscin or scopolamin in the very discomforting period of the second stage. This is not given to any patient, if the conclusion of the second stage is imminent.

We refrain from giving morphin at this time, because we routinely employ some form of inhalation anesthesia—and almost invariably ether—just as the completion of the second stage takes place. Morphin administered within an hour or two before the birth of the baby, as Doctor Fist has properly pointed out, has a decided deleterious effect on the child, so much so, that resuscitation is sometimes difficult and occasionally may result in fetal death.

In primigravida the method of Gwathmey or rectal analgesia appeals to me, and is employed quite regularly in my department as well as in my private practice. We have not observed any serious untoward effect from its use either in the mother or her offspring. For the best results it must obviously be carried out in strict accordance with the directions laid down by its originator.

Recently we have used in our ward service spinal analgesia in certain cases of operative delivery with a view of determining its true value. I am quite convinced that it fills a niche in some instances, though I believe that its scope of usefulness is more or less limited.

Chloroform I seldom, if ever, use, although I have great respect for it as an obstetric anesthetic if properly and wisely administered.

Twilight sleep in modified form, such as suggested by Doctor Fist, is probably employed more or less unconsciously by most accoucheurs.

I would hesitate, however, to administer a 50 per cent solution of magnesium sulphate in two cubic centimeter doses every half hour, nor could I be persuaded to hypodermically administer scopolamin in doses of grain 1/200 every hour, "if necessary to obtain relief," as advocated by the essayist.

I, however, have not had wide experience in administering the combination of magnesium sulphate and scopolamin in accordance with the plan advised by Doctor Fist and, therefore, I am not qualified to express an intelligent opinion as to its usefulness.

❦

E. M. Lazard, M. D. (311 Wilshire Medical Building, Los Angeles).—The relief of pain in labor is a subject which is always of the greatest interest to the obstetrician. Doctor Fist's review of the methods of analgesia that have been used, as well as the method which he describes, must therefore engage our serious attention. In our endeavors to attain a "painless childbirth" we must keep in mind that any such method, to be successful, must not carry any additional danger to mother or child, must not interfere with the progress of labor, and must be reasonably easy to carry out.

The method described by Doctor Fist would seem to be simple, and one would expect to get good results from the combination of scopolamin and magnesium sulphate. I have not had sufficient experience with the method as yet to be able to arrive at any conclusion as to its value. I believe, however, that any such method should be limited to the first stage of labor. Doctor Fist recommends "two cubic centimeters of a 50 per cent solution of magnesium sulphate every half hour until pain is relieved." He does not state any maximum number of doses which he has found it necessary to administer. Criticism might be made of this advice because of the possibility of getting toxic effects if too many such doses were

given. In our work at the Los Angeles General Hospital with the eclamptic toxemias, we have used as much as 22 grams, intravenously, in twelve hours without any evident ill effects. Assuming that not more than three or four doses of two cubic centimeters of 50 per cent solution, intramuscularly, would be necessary in any case, I believe that one would be well within the limits of safety and need not fear any ill effects.

For the second stage, I personally prefer nitrous oxid analgesia. In our endeavors to obtain a good analgesia, we must not overlook the fact that a most important factor in securing a "painless labor," is the early recognition and correction of any malpositions or malpresentations; for we must not allow too long a second stage in the hope of having such abnormalities spontaneously corrected.

❋

LYMAN H. ROBISON, M. D. (222 Westlake Professional Building, Los Angeles).—Obstetrical analgesia is a subject receiving considerable attention and discussion, not only by obstetricians, but by the laity as well, and more and more are women demanding a "painless childbirth" from their physicians. As a result the obstetrician frequently has a difficult course to pursue in attempting to accede to the patient's requests and yet keep clear of the dangers and complications of the several methods of analgesia now in use. On the other hand, the woman in labor is entirely right in expecting an effort at the relief of pain and, with our present knowledge of analgesia, we are not giving her the protection to which she is entitled if some pain-relieving procedure is not employed.

With Doctor Fist, I feel that morphin in labor is not free from danger to the child and that it should never be used late in labor. Even when used early and followed by an inhalation anesthesia, one not infrequently finds some difficulty in resuscitating the infant. If the morphin could be replaced with some efficient preparation free from the untoward effects of the narcotic, it would add materially to the safety of an analgesic method in obstetrics.

The suggestion made by Doctor Fist of combining scopolamin and magnesium sulphate interests me. It appears to be a simple procedure and, while I have had no personal experience with the method, the combination should enable one to obtain good results. The only drawback that I see to the method is the rather uncertain action of the scopolamin when used alone, not infrequently acting as a cerebral excitant rather than a hypnotic. If, as Doctor Fist claims, the presence of the magnesium sulphate prevents this untoward action, it appears to me to be a procedure well worth while in inducing analgesia during labor.

❋

DOCTOR FIST (Closing).—The interest in obstetrical analgesia, as evidenced by the discussions of Doctors Bland, Lazard, and Robison, indicates the attitude of present-day obstetricians. Relief of pain during childbirth is no longer considered unnecessary. The method under discussion is presented because of its simplicity, safety and effectiveness.

Elimination of the use of morphin seems highly desirable. Magnesium sulphate and scopolamin in the dosage employed have proved to be well within the safety limits. The average patient will not require, at the outside, more than three doses of scopolamin grain 1/200, nor more than five doses of magnesium sulphate, two cubic centimeters, of a 50 per cent solution.

Van Hoosen administers scopolamin, grain 1/100, every half hour as needed, without any ill effects. Lazard gives as much as 22 grams of magnesium sulphate, intravenously, in twelve hours. Lee Dorsett (*American Journal of Obstetrics,* February 1926, p. 227) gives as much as 100 cubic centimeters of magnesium sulphate, 25 per cent solution, intramuscularly, in twenty hours. Our average dosage is 4 to 5 grams, intramuscularly, during the course of the labor. Care must be taken to inject the magnesium sulphate deeply into the muscles to avoid abscess and slough.

CHILDHOOD TUBERCULOSIS—ITS TREATMENT*

REPORT OF CASES

By CHARLES L. IANNÈ, M. D.
San Jose

DISCUSSION *by Charles P. Durney, M.D., San Jose; Chesley Bush, M. D., Livermore; Ann Martin, M. D., Oakland.*

THE problems met in treating a chronic disease such as tuberculosis in childhood are of two distinct natures. They are problems of the mind and of the body. The aim of the physician of a child so afflicted must be to produce a mentally and physically well adult.

PLACE OF PARENTS IN TREATMENT

As the treatment of disease begins with the diagnosis, and as the child can only be treated through a third person—the parent—the manner in which the diagnosis is received will have a direct bearing upon the course of the disease, and the future welfare of the child. J. A. Meyers,[1] in a recent paper, states that there are three main types of reactors: the first, the mother who feels the diagnosis is impossible, as tuberculosis has not been in the family before; the second, who becomes hysterical, as she considers all forms of tuberculosis fatal; and the third, who is relieved to know that at last a diagnosis has been arrived at and that with the proper institution of treatment, good opportunity for recovery is assured.

A good type of the hysterical mother consulted me concerning her child of ten years. The history showed that the child had been subject to frequent colds and headaches. He recently had had scarlet fever with a complicating nephritis. A tonsillectomy had been performed because of continuation of fever. A change of doctors then occurred, as the child did not improve immediately. The second physician on finding "moisture" in the chest ordered an x-ray. On the subsequent visit the diagnosis of hilum gland tuberculosis was given the parent, together with indefinite unwritten instructions to give the child rest, plenty of food, fresh air, and sun baths. I gathered that she believed her child to be threatened by death. She placed him on twenty-four hours bed rest regimen without lavatory privileges; put him on a high caloric diet; began a rigorous course of sun baths with the initial dose of fifteen minutes to complete body; and took frequent temperature readings.

On examination the child was found to weigh one hundred pounds, thirty-two pounds over the average for age and height; lungs and heart were negative; purulent secretion was present in the nasopharynx.

The x-ray was consistent but not conclusive of hilum gland tuberculosis.

The mother was assured that the child did not have a fatal form of tuberculosis and that the rigid regimen should be modified. She was told

* Read before the Pediatric Section of the California Medical Association at the fifty-eighth annual session, Coronado, May 6-9, 1929.